IN THE CLAIMS:

1. (Currently Amended) A method of fabricating a membrane electrode assembly for use in a fuel cell, comprising:

(A) providing a mold that includes a first and second mold plate adapted to impart a desired shape to induce compression to decrease the thickness of components in the mold and to apply pressure substantially evenly across an entire active area of a membrane electrode assembly being fabricated in the mold;

(B) providing a lead frame, including at least a first lead frame component that is adapted to be received into said mold~~, wherein the lead frame includes a current collector with a raised surface where the raised surface provides a minimum limit to the thickness of components in the mold~~;

(C) assembling a protonically conductive membrane with catalyst coatings on each of its major surfaces onto said first lead frame component;

(D) placing said lead frame containing said membrane into the mold;

(E) compressing said second mold plate onto said first mold plate;

(F) introducing a moldable material in communication with said mold plates; and

(G) allowing the moldable material to cure in said mold to solidify and form a plastic frame around said membrane to produce a membrane electrode assembly for use in a fuel cell, wherein the plastic frame holds components of the fuel cell in compression without using screws and nuts.

2. (Previously Presented) The method as defined in claim 1 further comprising integrating the current collector into said first lead frame component onto which said membrane is placed.

3. (Previously Presented) The method as defined in claim 2 further comprising:

(A) providing a second lead frame component that includes a second current collector; and

(B) sandwiching said catalyzed membrane between the first and second current collectors;

(C) introducing the lead frame components into said mold;

(D) compressing the first and second mold plates together;

(E) introducing a moldable material into said mold;

(F) allowing the moldable material to cure to form the shape of the mold plates thereby forming a sealed fuel cell.

4. (Original) The method as defined in claim 1 wherein the step of introducing the moldable material includes injection molding a moldable material into said mold.

5. (Cancelled)

6. (Currently Amended) A method of fabricating a fuel cell array, comprising:

(A) providing a mold that includes a first and second mold plate of a desired shape that forms a cavity to induce compression to decrease the thickness of components in the mold and to apply pressure substantially evenly across an entire active area of a membrane electrode assembly being fabricated in the mold;

(B) providing a sheet of protonically conductive membrane material that has been coated on each of its major surfaces with a catalyst material to form a sheet of catalyzed membrane;

(C) providing a lead frame structure that includes a plurality of individual lead frame components that define separate fuel cells, wherein each lead frame includes a current collector ~~with a raised surface, where the raised surface provides a minimum limit to the thickness of components in the mold~~;

(D) assembling said sheet of catalyzed membrane into said lead frame structure;

(E) placing said lead frame structure containing said membrane sheet into the mold;

(F) compressing said second mold plate onto said first mold plate;

(G) introducing a moldable material in communication with said mold plates; and

(H) allowing the plastic to cure in said mold to solidify and form a plastic frame around said individual fuel cells to produce a fuel cell array, wherein the plastic frame holds components of the individual fuel cells in compression without using screws and nuts.

7. (Currently Amended) A method of establishing a seal around a fuel cell, comprising:

(A) providing a lead frame assembly including:

(i) providing first and second current collectors adapted to serve as lead frame components in an associated mold device~~, wherein the first and second current collectors each have a raised surface~~;

(ii) assembling fuel cell components including:

(a) a catalyzed protonically conductive, electronically non-conductive membrane; and

(b) first and second diffusion layers disposed on opposite sides of said membrane;

(iii) arranging said fuel cell components between said first and second current collectors;

(B) inserting the resulting lead frame assembly into a molding device;

(C) introducing a moldable material into said molding device having a mold cavity designed such so as to decrease the thickness of components in the mold ~~to a minimum limit for the thickness of components in the mold which is set by the raised surface on the first and second current collectors~~

and to apply pressure substantially evenly across an entire active area of the membrane being fabricated in the mold; and

(D) allowing said moldable material to cure to seal the edges of the lead frame assembly against leaks to thereby seal the fuel cell without using a gasket and said moldable material forming a plastic frame, wherein the plastic frame holds components of the fuel cell in compression without using screws and nuts.

8. (Previously Presented) The method as defined in claim 7 further comprising spot welding the first and second current collectors that serve as lead frame components together to maintain the components in place.

9. (Previously Presented) The method as defined in claim 7 further comprising trimming excess lead frame component portions away from said fuel cell to result in a finished fuel cell.

10. (Previously Presented) The method as defined in claim 7 further comprising providing said mold device with a mold cavity which, when said moldable material is introduced into said mold cavity and cured, creates a frame around said fuel cell.

11. (Currently Amended) A method of establishing a sealed diffusion layer for use in a fuel cell, comprising:

(A) providing a first current collector integrated into a lead frame component, wherein the first current collector includes a raised surface;

(B) applying a diffusion layer material to said first current collector on said lead frame component;

(C) providing a second current collector integrated into a lead frame component;

(D) applying a second diffusion layer material to said second current collector on said lead frame component;

(E) placing a catalyzed protonically conductive, electronically non-conductive membrane between said first lead frame component and said second lead frame component to form an assembly;

(F) placing said assembly into a molding device;

(G) closing mold plates associated with said molding device and hot pressing the assembly for a predetermined time period to decrease the thickness of components in the mold ~~to a minimum limit for the thickness of components in the mold which is set by the raised surface on the first current collector~~ and to apply pressure substantially evenly across an entire active area of a membrane electrode assembly being fabricated in the mold;

(H) introducing a moldable material into said mold cavity of said mold device; and

(I) allowing said moldable material to cure to seal said lead frame components integrating said first and second current collectors together to form a fuel cell, wherein said moldable material forms a plastic frame and the plastic frame holds components of the fuel cell in compression without using screws and nuts.

12. (Original) The method as defined in claim 11 wherein step (H) includes an insert molding technique.

13. (Previously Presented) The method as defined in claim 11 further comprising spot welding said first and second lead frame components together to maintain said components in position prior to placing the assembly into the molding device.

14. (Currently Amended) A method of introducing compression into a fuel cell, comprising:

(A) providing a catalyst coated membrane;

(B) providing a first current collector integrated into a first lead frame component suitable for being received into a molding device~~, wherein the first~~

~~current collector includes a raised surface where the raised surface provides a minimum limit to the thickness of components in the mold~~;

(C) providing a second current collector integrated into a second lead frame component suitable for being received into a molding device;

(D) assembling said first and second current collectors on either side of said membrane to result in an assembly;

(E) placing said assembly into said mold device that has been provided with mold plates that form a cavity that induces compression to decrease the thickness of components in the mold and to apply pressure substantially evenly across an entire active area of a membrane electrode assembly being fabricated in the mold;

(F) closing said mold plates and maintaining said mold plates in a closed position to induce further compression; and

(G) introducing a moldable material into the resulting mold cavity thereby creating a plastic frame around the fuel cell that maintains compression within said fuel cell without the need for mechanical fasteners.

15. – 21. (Cancelled)

22. (New) A method of fabricating a membrane electrode assembly for use in a fuel cell, comprising:

providing the membrane electrode assembly having a proton exchange membrane, wherein the proton exchange membrane is configured with an anode aspect and a cathode aspect;

providing an anode side component of a lead frame, with the anode side component of the lead frame having an anode current collector;

providing a cathode side component of the lead frame, with the cathode side component of the lead frame having a cathode current collector;

connecting the anode side component of the lead frame to the cathode side component of the lead frame with the membrane electrode assembly sandwiched between to form a lead frame assembly;

placing the lead frame assembly within a mold cavity;

closing the mold cavity, wherein the fuel cell is compressed to a predetermined thickness dictated by a desired internal pressure; and

injecting plastic around the membrane electrode assembly to form a plastic frame, where in the plastic frame holds components of the fuel cell in compression without using screws and nuts.

23. (New) The method of claim 22, further comprising:

trimming excess material from the lead frame structure away to leave only the fuel cell with current collectors extending outward.

24. (New) The method of claim 22, further comprising:

providing one or more anode diffusion layers between the anode current collector and the anode aspect, wherein the one or more anode diffusion layers are employed to

evenly distribute a liquid fuel mixture across the anode aspect of the proton exchange membrane; and

providing one or more cathode diffusion layers between the cathode current collector and the cathode aspect, wherein the one or more cathode diffusion layers allows a fast supply and even distribution of gaseous oxygen across the cathode aspect of the proton exchange membrane.

25. (New) The method of claim 22, wherein the anode current collector, the cathode current collector, and the proton exchange membrane are each configured with a plurality of openings that allow plastic to flow through to form a plurality of internal fasteners.